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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,596	05/31/2001	Tsutomu Masuko	Q61608	7102

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EXAMINER

LISH, PETER J

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 03/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/867,596

Applicant(s)

MASUKO ET AL.

Examiner

Peter J Lish

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 January 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 7-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 4-6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4-6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-6, drawn to a carbon powder, classified in class 423, subclass 449.1.
- II. Claims 7-9, drawn to a method of treating carbon black, classified in class 423, subclass 449.2.
- III. Claims 10-15, drawn to a carbon composite, classified in class 428, subclass 408.
- IV. Claims 16-20, drawn to an electrode and battery system, classified in class 429, subclass 209.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made by a materially different process such as by milling a graphite powder to a desired size.

Inventions I and III are at best related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product can be used in a materially different process, such as a conductive additive to a polymer matrix.

Inventions I and IV are at best related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product can be used in a materially different process, such as such as a conductive additive to a polymer matrix.

Inventions II and III are related as process of making and process of using the product. The inventions are distinct for a combination of the reasons given above. The product can be made by a materially different process, and the product can be used in a materially different process.

Inventions II and IV are related as process of making and process of using the product. The product can be made by a materially different process, and the product can be used in a materially different process.

Inventions III and IV are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product can be used in a materially different process such as in the formation of a rubber composite.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Art Unit: 1754

During a telephone conversation with Sheldon Landsman on 2/13/03 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-6. Affirmation of this election must be made by applicant in replying to this Office action. Claims 7-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Claim Objections***

Claims 4-6 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims 4-6 have not been further treated on the merits.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mochida et al. (“Carbonization of Pitches-IV”).

Mochida et al. disclose a carbon crystallite with a lattice spacing of about 0.674 nm and a crystallite size of between 38 and 69 nm (Table 3). It is expected that the crystallites of Mochida et al. are in powder form, as agglomerates or agglomerate sizes are not discussed. Alternatively, it would have been obvious to one of ordinary skill at the time of invention to produce a powder form

Art Unit: 1754

of the crystallites of Mochida et al. in order to provide highly conductive and very small graphite particles.

Claims 1-2 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mochida et al. ("Carbonization of Aromatic Hydrocarbons-III").

Mochida et al. disclose a carbon crystallite with a lattice spacing of 0.672 nm and a crystallite size of about 66 nm (Table 1). It is expected that the crystallites of Mochida et al. are in powder form, as agglomerates or agglomerate sizes are not discussed. Alternatively, it would have been obvious to one of ordinary skill at the time of invention to produce a powder form of the crystallites of Mochida et al. in order to provide highly conductive and very small graphite particles.

Claims 1-2 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shinichi (JP 07206416 A).

Shinichi et al. discloses a graphite hyperfine powder having properties of particles and greater than 400 m<sup>2</sup>/g specific surface area. The d002 spacing of the graphite particles is around 0.336 nm, corresponding to a crystallite plane spacing of about 0.672 nm. The graphite powder is described as hyperfine, the surface area reaches values as high as 852 m<sup>2</sup>/g, and the arc discharge process is known to produce particles with sizes on the nanometer scale. Accordingly, it is expected that the graphite powder of Shinichi has a particle size of less than 100 nm.

Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Carbon Black Manual.

Art Unit: 1754

The Carbon Black Manual discloses that by heating carbon black to a temperature between 2,700-3,000 °C, the interlayer distance, d002, is lowered (the carbon black is graphitized). Table 1-1 shows a carbon black with an interlayer spacing of 0.3395 nm, corresponding to a crystallite planar spacing of 0.6790. The manual also teaches that carbon black is often used in the form of fine particle spheres. It is expected that the carbon black of Table 1-1 is in the form of a powder of small particles spheres with a particle size of less than 100 nm. Alternatively, it would have been obvious to one of ordinary skill at the time of invention to treat a carbon black in the form of particles with a size of less than 100 nm to the high temperature graphitization in order to produce a fine powder of carbon black with a lowered interlayer distance.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuhiro et al. (JP 62246813 A) taken with Masaru et al. (JP 2000-273351).

Yasuhiro et al. disclose a process for the production of a graphitized carbon black powder. A boron compound, such as boron oxide, is mixed with carbon black powder, having a diameter of between 10-100 nm, to the extent of about 3 wt% (of B). The mixture is then heated to a temperature as high as 2800 °C to effect graphitization.

Art Unit: 1754

Masaru et al. disclose the production of a carbon black formed by mixing carbon black and a graphitization promoting substance, such as boron carbide, in a weight percentage between 0.1-10 % (of B), and heating at a temperature above 2,000 °C to effect graphitization. It would have been obvious to one of ordinary skill at the time of invention to substitute the boron graphitization promoter of Masaru et al. in the process of Yasuhiro et al. because it provides the same effect. Because there is no difference seen between the process taught by the combined references of Masaru et al. and Yasuhiro et al. and that of the applicant, it is expected that the product produced by the combined process will have the same properties as that of the applicant.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Lish whose telephone number is 703-308-1772. The examiner can normally be reached on 9:00-6:00 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 703-308-3837. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-305-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



PL  
March 4, 2003

STUART L. HENDRICKSON  
PRIMARY EXAMINER